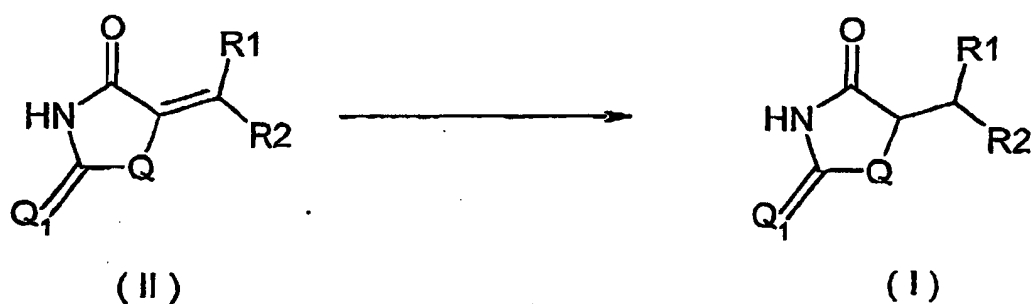


CLAIMS

1. A method for preparing a thiazolidinedione, oxazolidinedione or hydantoin compound of formula (I) from a compound of formula (II):



wherein:

Q represents an oxygen atom or a sulfur atom;

Q1 represents an oxygen atom or a sulfur atom;

R1 and R2, which can be identical or different, represent a hydrogen atom, a C₁₋₁₀ alkyl chain, a cycloalkyl, an alkylaryl, an arylalkyl; the alkyl, cycloalkyl, alkylaryl or arylalkyl groups being optionally substituted by an alkyl, an alkoxy or aryloxy, a halogen, a hydroxy, a sulfinio, a sulfonyl, an amino such as NH₂, NHR₃, N(R₃)₂, wherein R₃ represents an alkyl, an alkoxy or an alkylcarbonyl,

reacting a compound of formula (II) with formic acid, either as a hydrogen donor in a hydrogen-transfer reaction or as a solvent in a hydrogenation reaction, in the presence of a catalyst containing a transition metal to obtain a corresponding compound of formula (I).

2. The method according to claim 1, wherein the formic acid is formic acid at about 100% or a solution containing formic acid with a formic acid level that can range from about 0.1 to about 99%, the solution being an aqueous solution or an organic solution or a mixture thereof.

3. The method according to claim 1, wherein the transition-metal containing catalyst is a homogeneous or heterogeneous catalyst.

4. The method according to claim 3, wherein the homogeneous catalyst is selected from the group consisting of Ir(COD)Cl, Ru(p-cymene)Cl₂, Ru(COD)Cl₂, Ru(PPh₃)₃Cl₂, RuCl₃, Ru(PPh₃)₄Cl, RuCl₃·3H₂O, Ru(PPh₃)₄H₂, Rh(PPh₃)₃Cl, RhCl₃·3H₂O, Ru(PPh₃)₄H, Rh(COD)tri-fluoromethane sulfonate, (C₆H₁₂)₃P(COD)pyridine-Ir(F)₆, Ir(PPh₃)₃H₂Cl, Ir(PPh₃)₃HCl₂, Ir(PPh₃)₂H₃, Ir(PPh₃)₃H₅, Ir(PPh₃)₂(CO)X, wherein X is Cl, Br or I, Ir(PPh₃)₂(CO)H, Os(PPh₃)₃HCl, Pd(OAc)₂, PdCl₂, Pd(PPh₃)₂Cl₂, Pd(NH₄)₂Cl₄, Pt(PPh₃)₂Cl₂, PtCl₄K₂, Fe(PPh₃)₂Cl₂, Ni(PBu-n₃)₂, and ReCl₅.

5. The method according to claim 3, wherein the heterogeneous catalyst is selected from the group consisting of Pt, Pt/C, Pt(O)₂, Pd, Pd/C, Pd/CaCO₃, Pd/SiO₂, Pd/BaCO₃, Pd(OH)₂/C, Ir, Ir/C, Ru, Ru/C, Rh, Raney Ni, and Fe.

6. The method according to claim 1, wherein the compound of formula (II) reacts with formic acid in the presence of a transition-metal based catalyst and in the presence of a secondary solvent.

7. The method according to claim 6, wherein the secondary solvent is selected from the group consisting of water, a hydrocarbon selected from the group consisting of hexane, heptane, octane, nonane, decane, benzene, toluene and xylene, an ether selected from the group consisting of tetrahydrofuran, dioxane, dimethoxyethane, diisopropyl ether and diethylene glycol dimethyl ether, an ester selected from the group consisting of ethyl acetate, butyl acetate and ethyl propionate, a ketone selected from the group consisting of acetone, diisopropyl ketone, methyl isobutyl ketone, methylethyl ketone and acetylacetone, an alcohol selected from the group consisting of methanol, ethanol, n-propanol, iso-propanol, butanol, isobutanol and methoxyethanol, an alkyl halide selected from the group consisting of dichloromethane, chloroform and 1,2-dichloroethane, an acid selected from the group consisting of acetic acid, propionic acid and butyric acid, an amide and a sulfoxide.

8. The method according to claim 1, wherein the compound of formula (II) reacts with formic acid as a solvent in a hydrogenation reaction in the presence of hydrogen, and in the presence of a transition-metal based catalyst under the following operating conditions:

- the optional presence of a secondary solvent;
- a temperature comprised between about 0 and about +150°C;
- a metal quantity/substrate quantity ratio comprised between about 1/10,000 and about 5%;
- a hydrogen pressure between about 0.1 and about 50 bar;
- a reaction duration comprised between about 0.5 and about 40 hours.

9. The method according to claim 1, wherein the compound of formula (II) reacts with formic acid as a hydrogen donor in a hydrogen-transfer reaction, in the presence of a transition-metal based catalyst under the following operating conditions:

the optional presence of a secondary solvent;

a temperature comprised between about 0 and about +150°C;

a metal quantity/substrate quantity ratio comprised between about 1/10,000 and about 5/100;

a reaction duration comprised between about 0.5 and about 40 hours.